

LIFE HISTORY NOTES ON *LEUCOMONIA BETHIA* (KIRBY) (LEPIDOPTERA: SPHINGIDAE)

D.A. LANE

3 Janda St, Atherton, Qld 4883

Abstract

Notes are presented on the life history of *Leucomonia bethia* (Kirby). The larval food plant is *Clerodendrum floribundum* R. Br. (Verbenaceae).

Introduction

Leucomonia bethia (Kirby) is the only known species within the genus *Leucomonia* Rothschild & Jordan. It has a wide distribution across northern Australia (D'Abrera 1987) but nothing has been published to date on its biology. During January and February 2005, eggs and early instar larvae of *L. bethia* were found near Granite Creek, 15 km northwest of Atherton in northern Queensland. These were reared through to adults and the following observations recorded.

Life history

Food plant. *Clerodendrum floribundum* R. Br. (Verbenaceae).

Egg (Fig. 1). Spherical; 1.5 mm in diameter; pale green; laid singly on upper or undersurface of food plant leaf.

First instar larva (Fig. 2). Length 5-8 mm. Head, body and legs light green (almost translucent). Caudal horn dark brown, directed backwards and extending away from body, turned upwards slightly with extreme upper tip bifurcate.

Second instar larva (Fig. 3). Length 8-20 mm. Body and legs light green; a mid-lateral band, adorned with fine pale yellow spots, extends along thoracic and abdominal segments. Head and anal claspers darker green, also adorned with fine yellow spots. Caudal horn brown, clothed in brown setae, raised at approximately 30° and turned upwards slightly, with extreme upper tip also bifurcate but not as distinctly as in the first instar.

Third instar larva (Fig. 4). Length 20-32 mm. Head, body and legs green (darker than first and second instars). Head, body and upper prolegs with slightly raised yellow spots; seven pale yellow oblique stripes along abdominal segments 1-8, arising anterior to and below spiracles and terminating on dorsal surface of abdomen; posterior stripe terminating at base of caudal horn. Caudal horn brown, nearly straight, angled at approximately 45°, with brown setae.

Fourth instar larva (Fig. 5). Length 32-55 mm. Head, body and legs green, with slightly raised fine yellow tubercles. Thorax with legs light brown; a series of raised green or brown tubercles on anal prolegs and on dorsal surface of thoracic segments; lateral oblique stripes more prominent,

coloured yellow with upper dark green edging. Caudal horn straight, brown with yellow underside, clothed in fine, raised tubercles. Spiracles brown, with surrounding narrow yellow ring.

Fifth instar larva (Figs 6-8). Length 55-80 mm. Head, body and legs with markings as in fourth instar, but larva more stocky. Green or brown tubercles on anal prolegs prominent; yellow tubercles on body often less prominent and in green colour form (see below) often lacking; lateral oblique stripes coloured white with upper dark green edging. Caudal horn dark brown, curved slightly backwards, with raised brown tubercles. Raised tubercles on thoracic segments either green or brown. Fifth instar larvae occur in both green (Fig. 6) and brown (Fig. 7) colour forms, with intermediate (Fig. 8) forms occurring.

Pupa (Fig. 9). Dark brown; haustellum case well developed and about one quarter length of pupa. Cremaster black, deeply pitted, in dorsal view nearly an equilateral triangle, terminating in a pair of distally directed, sharp spines about one third width of length; these spines are basally wider and angled more obtusely away from body axis compared with those on the pupal cremaster of *Psilogamma argos* Moulds & Lane. In lateral view, cremaster sides nearly straight and parallel sided, tilting upward from body axis. Pupa similar in overall shape and form, but much darker brown in colour, than that of *P. argos* (Moulds and Lane 1999).

Observations

Larvae normally rest on the undersurface of food plant leaves and are remarkably well camouflaged, as the combination of green colouration with diagonal striping gives the impression of filtered sunlight. During particularly hot days, mature larvae (especially brown colour forms) were observed at the base of food plant trees, resting head upwards with caudal horns touching the ground. This situation possibly afforded more shade and slightly cooler conditions, and also may have aided camouflage.

At the time of year observed (January-February), third to fifth instar larvae were heavily parasitised by tachinid flies, with up to 90% mortality rate. Such final instar larvae continued to feed, but developed slowly. Attempts at pupation usually failed, as the limp larval body rapidly decomposed after multiple fly larvae exited.

Before pupating, final instar larvae first turn a purplish colour, then leave the food plant and may wander considerable distances before finding a suitable pupation site.



Figs 1-9. *Leucomonia bethia*. (1) egg; (2) first instar larva; (3) second instar larva; (4) third instar larva; (5) fourth instar larva; (6-8) fifth instar larvae: (6) green colour form (note the parasitic strike marks on abdominal segment 1); (7) brown colour form; (8) intermediate colour form; (9) pupa, lateral view.

In captivity, purplish coloured larvae were placed in suitable containers containing 150 mm of bedding soil. Some burrowed immediately and others wandered for up to several hours before burrowing to pupate. In this situation, they constructed cells made of soil lined with silk and pupated within these cells. Adults emerged from pupae after two to three weeks.

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References

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